Part A
Answer all the questions on this paper itself.

01. n^{th} term of a number sequence is $8 - 3n$. Find the 4th term of it.

02. If the event A is obtaining a square number when rolling a die numbered 1 to 6 , find P(A).
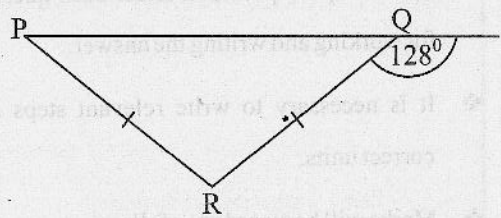
03. Select and underline the coordinates of the point which satisfy the both inequalities $x < 3$ and $y > 0$.

    (i) A – (3 , 0)   **(ii)** B – (2 , 1)   **(iii)** C – (5 , 2)   **(iv)** D – (0 , -3)
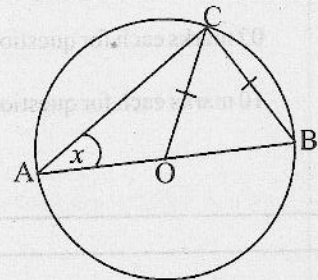
04. $\dfrac{1}{a} - \dfrac{1}{2a}$ Find the value.

05. Find the area of the two flat surfaces of a cylinder with the radius 7 cm.
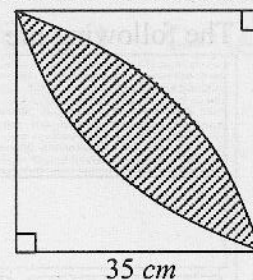
06. Find the magnitude of $P\hat{R}Q$.

07. Figure shows a circle with the centre O. Find the value of x.

03. The figure shows a square shaped piece of fabric with the length of a side 35 *cm*, which was prepared to make a cushion cover. The shaded portion of it was sewn in red colour fabric and the remaining portion was sewn in yellow colour fabric.

35 *cm*

(i) It is needed to sew a ribbon around the red colour portion. Find the length of the ribbon needed for it.

(ii) If 1 *m* of ribbon costs Rs. 15, calculate the total cost of ribbon needed for 10 such cushion covers.

(iii) Find the area of the yellow colour fabric needed to sew the both sides of the cushion cover.

04. A card is drawn from a bag containing 5 identical cards numbered from 1 to 5 and its number is recorded. Then the card is put back in the bag and again a card is drawn and its number is recorded.

(i) Show the relevant sample space of the above event in the grid.

(ii) Find the probability that the same number is drawn on both occasions.

(iii) Find the probability of getting a number greater than 2 on the first draw.

(iv) Find the probability of obtaining 5 on the first draw and obtaining a number greater than 3 on the second draw.

(v) Find the probability that a prime number is drawn in both occasions.

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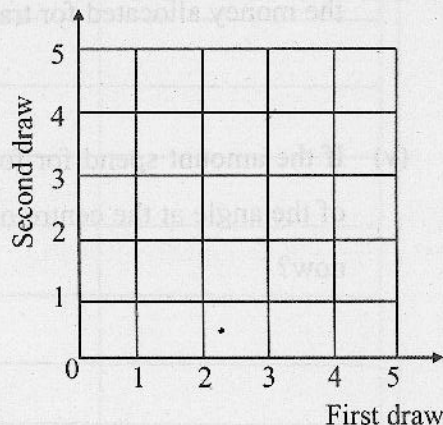
05. The following pie chart illustrates how a certain person has spent his monthly salary.
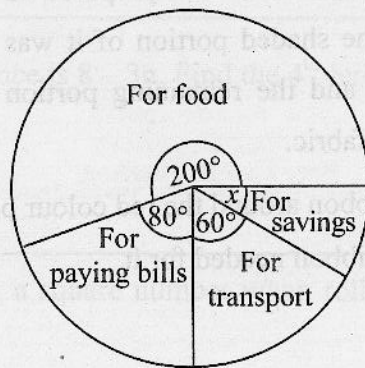
(i) Calculate the magnitude of the angle at the centre of the sector which denotes his savings.

(ii) If he spends Rs. 3 000 for his monthly transportation, what is his monthly salary?

(iii) How much does he spend for food?

(iv) Represent in the simplest form, the ratio of the money allocated for paying bills to the money allocated for transportation.

(v) If the amount spend for food is increased up to Rs. 12 000, what is the magnitude of the angle at the centre of the sector which denotes the money he spends for food now?

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மேல் மாகாணக் கல்வித் திணைக்களம்
Department of Education - Western Province

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ஆண்டிறுதி மதிப்பீடு - 2016
Year End Evaluation

| ශ්‍රේණිය
தரம்
Grade | 10 | විෂයය
பாடம்
Subject | Mathematics | පත්‍රය
வினாத்தாள்
Paper | II | කාලය
காலம்
Time | 03
Hours |

* Answer ten questions selecting five questions from part A and five questions from part B.
* Each question carries 10 marks.
* In a cylinder of base radius r and the height h, the area of the curved surface is $2\pi rh$ and the volume is $\pi r^2 h$.

Part A
Answer only five questions.

01. A table with the information on how the taxes are calculated, which was implemented by the Inland Revenue Department is given below.

Annual Income	Tax percentage
Initial Rs. 500 000	Tax free
Next Rs. 500 000	4%
Next Rs. 500 000	8%
Next Rs. 500 000	12%

(i) If the annual income of a business men is Rs. 1 650 000, calculate the income tax he has to pay for the year.

(ii) After paying the income tax, if he deposited 20% of his remaining income in a bank which pays an annual simple interest rate of 6%, find the extra income he gained at the end of the year.

02. A table prepared to draw the graph of the function $y = x^2 - a$ is given below.

x	-3	-2	-1	0	1	2	3
y	5	0	-3	-4	-3	0	5

(a) (i) What is the value of 'a'?

(ii) Using a scale of ten small divisions as one unit along both the x – axis and y - axis, draw the graph of the above function.

(b) Using the graph,

(i) Write the equation of the axis of symmetry and the coordinates of the turning point.

(ii) Write the interval of values of x for which the function decreases negatively.

(iii) Find the roots of the equation. $x^2 - a = 0$

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03. (i) x and y are two consecutive prime numbers. The value obtained by subtracting y from three times of x is 8. Four times of x is 1 less than three times of y. Find the pair of prime numbers x and y, by constructing a suitable pair of simultaneous equations.

(ii) Solve. $x(x-3)+2=0$

04. (a) Figure shows a solid metal cylinder of the circumference of the base 88 cm and the height 25 cm.

    (i) Find the base radius r.

    (ii) Find the area of the curved surface of the cylinder.

    (iii) Calculate the volume of the cylinder.

                                                       25cm
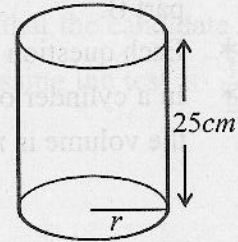
(b) Find the value using logarithmic tables.

$$256.7 \div 9.81$$

05. (a) The following table indicates the distance travelled by a car moving at a uniform speed and the time taken for it.

Time (hours)	0	1	2	3	4	5	6
Distance (km)	0	40	80	120	160	200	240

    (i) Draw a distance time graph using the above information.

    (ii) Find the gradient of the graph.

    (iii) Calculate the speed of the car.

(b) Calculate the time takes to fill a tank of capacity $3m^3$ completely, using a pipe through which water flows at a rate of 500 litres per minute.

06. (a) Solve. $\dfrac{5}{2(a+1)} + \dfrac{1}{(a+1)} = 3$

(b) Rs. 100 is sufficient to buy 5 pencils and 4 pens. Taking the price of a pen as Rs. x and the price of a pencil as Rs 8.

    (i) Write down an inequality using the above information.

    (ii) Solve the inequality and find the maximum value that the price of a pen can take.

07. Sathira has cut 15 pieces of wire to make a decoration for the school mathematics day. The length of the first piece of wire cut by Sathira is 10 cm and the lengths of the second and the third pieces of wire are 13 cm and 16 cm respectively. Each piece of wire is 3 cm longer than the previously cut piece of wire.

   (i) Write down for what progression do the lengths of the pieces of wire belongs to and find the length of the 15th piece of wire.

   (ii) If the total length of the pieces of wire cut is 275 cm, find the number of pieces of wire that was cut.

08. In the following constructions, use only a straight edge with a cm/mm scale and a pair of compasses. Show the construction lines clearly.

   (i) Construct the triangle ABC with AB = 7cm , $B\hat{A}C = 60°$ and $A\hat{B}C = 30°$

   (ii) Construct the perpendicular bisector of AB.

   (iii) Construct the circle with the diameter AB and name its centre as O.

   (iv) Join CO and produce it to meet the circle at D.

   (v) Join AD and write down a relationship between $C\hat{B}A$ and $C\hat{D}A$

09. A frequency distribution of marks obtained by a group of grade 10 students for a test is given below. (The class interval 10 – 20 indicates $10 \le x < 20$)

Marks	0 - 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80
Frequency	3	10	17	20	14	10	4	2

   (i) According to the frequency distribution, what could be the maximum value obtained by a student?

   (ii) Calculate the mean mark of a student by taking the mid value of the class interval in which the most number of students includes.

   (iii) If the mean mark of a student to be 40, how many marks should be added to the total mark obtained by all the students?

   (iv) Remedial lessons are to be given for the students who scored less than 40. If task sheets worth Rs. 300 should be given for each of them, calculate the total cost needed.

10. (a) Out of 20 who participated in a pilgrimage are men. 8 of the men carried travelling bags. Total number of people who carried travelling bags are 28.

      (i) Represent the above information in a Venn diagram.

      (ii) How many of the men did not carry travelling bags?

      (iii) How many of the women carried travelling bags?

      (iv) If the number of women who didn't carry travelling bags were 10, how many people participated in the pilgrimage in total?

(b) From the candidates who faced a practical test, the probability that the candidate A passing the test is $\dfrac{3}{4}$ and probability that the candidate B passing the test is $\dfrac{1}{2}$. Assuming that these event are independent,

      (i) Find the probability of both of them passing.

      (ii) Find the probability of one of them passing.

11. (a) Write down the theorem related to isosceles triangles.

  (b) In the figure given below, AC = BD and $A\hat{C}E = B\hat{D}E$.
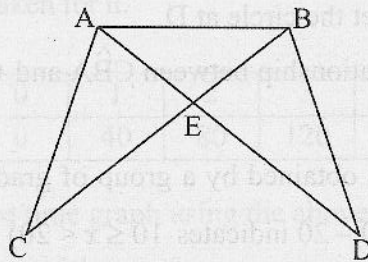
      (i) Show that ACE $\Delta \equiv$ BDE Δ

      (ii) Hence, Show that $B\hat{A}E = A\hat{B}E$

      (iii) Show that Δ ABC and Δ ABD are equal in area.

12. In a circle with centre O, the chord AB is produced to X such that AB = BX. Draw a diagram and mark the above data on it. Prove that $OX^2 = OA^2 + 2BX^2$

  (Hint : Draw the perpendicular OE , from O to AB)

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